

Vehicle Crash Testing

The Application

A leading original equipment manufacturer (OEM) of air bag systems required an in-vehicle data acquisition system to verify crash test results. Crash data is gathered by using a magnetostrictive sensor. When a stress is experienced, as it would during a vehicle crash, magnetization alters and the output of the sensor changes signaling that impact has occurred. The OEM subjects vehicles with air-bag systems to simulated crash tests. Because the beginning of the crash contains the most critical events, engineers work to determine the precise time of the crash, and how long it takes the sensor to detect the crash. Data is collected in the 0.5s to 1s interval immediately following impact, which produces 50,000 to 100,000 data points. The manufacturer evaluated several data acquisition systems; however, these systems were not durable enough and did not meet the sampling requirement.

System Design

The manufacturer selected IOtech's [LogBook/300™](#) stand-alone data acquisition system, which provided the convenience of a PC-based system without exposing the PC to damage. The LogBook/300's removable PC-Card (PCMCIA) permitted data transfer to a benchtop PC. To perform a test, company technicians mounted the compact LogBook in the test vehicle and connected the system to a terminal board. The terminal board was connected to the air-bag system's magnetostrictive sensor and an impact trigger switch. The engineers programmed the LogBook/300 to trigger on a switch closure signal from the impact area — often a TTL compatible signal. The LogBook was configured to sample the magnetostrictive sensor at 100 kHz for 1 second. After each test, technicians upload the data from the LogBook's 20 Mbyte PC-Card to the lab's computer. LogView™ *Out-of-the-Box™* software provided an easy means to configure the application on the lab PC, without programming. LogView features a simple interface for setting up channel acquisition parameters while offering features such as multiple sample rates, calculated channels, and dynamic outputs.

LogBooks™

Stand-Alone Intelligent
PC-Based Data Acquisition Systems

***ChipCenter's Alex Mendelsohn
says the LogBook/360 is "a quintessential
expression of what today's mixed-signal
data acquisition can and should be."***

Read the [Full Review](#)

Features

- Operates without a PC at the test site
- 16-bit, 100-kHz analog & digital sampling
- Compact yet expandable architecture can accommodate over 400 channels of analog, digital, & frequency I/O
- Stand-alone nonvolatile storage of over 250 million samples via removable PC-Card memory
- Card swapping and uploading during acquisition allows continuous data acquisition
- Communication with PC via RS-232, parallel port, modem, or by transporting a PC-Card; optional RS-422 interface
- Built-in analog inputs support 14 programmable ranges up to 20V
- Synchronous, mixed signal acquisition of analog, digital, and counter inputs
- Optional modem support provides remote communication
- Optional GPS support (model /360 only) logs location information*
- Optional control terminal provides channel inspection and acquisition queries
- AC or DC powerable

Signal Conditioning Options

- [Expansion cards & modules](#) for high-voltage/current, strain gages, thermocouples, isolation, relays, accelerometers, filtering, & simultaneous sample & hold in al

Software

- Includes LogView™ *Out-of-the-Box*™ software for easy setup, calibration, & more; no programming required
- Simple spreadsheet-style interface provides powerful setup features for immediate startup
- Acquisition configurations can be transported to the LogBook via PC-Card, serial port, parallel port, or modem connection
- Provides direct support for a wide variety of transducers
- Includes DIADEM®-View for post-acquisition data viewing

* Contact factory for availability

Complete Information

See complete catalog information on the [LogBook data logger](#) in PDF format (1 MB), including:

- Operating Modes
- I/O, Expansion and Signal Conditioning
- Triggering and Sampling
- Channel-Scanning Flexibility
- Remote Operation Terminal
- LogBook/Modem Features
- LogBook/GPS Features
- Included LogView Software Features
- Complete Specifications

Application Breifs

[In-Vehicle Temperature Testing](#)

An automaker tests engine temperatures under extreme operating conditions

[Vehicle Crash Testing](#)

An airbag manufacturer tests its products with a sturdy, stand-alone data acquisition system

Ordering Information

Data acquisition system including AC adapter; 2 ft. parallel port cable; 6 ft. serial cable; LogView & DIADEM®-View software	LogBook/300	Add to Cart
Data acquisition system with internally housed signal conditioning including serial ports; AC adapter, 2 ft. parallel port cable; 6 ft. serial cable; LogView & DIADEM®-View software	LogBook/360	Add to Cart
PC-Card Memory (required) 12MB solid state memory	MEMCARD12	Add to Cart
40MB solid state memory	MEMCARD40	Add to Cart
80MB solid state memory	MEMCARD80	Add to Cart
260MB rotating hard drive memory	MEMCARD260	Add to Cart

520MB rotating hard drive memory	MEMCARD520	Add to Cart
Hand-held terminal with 2 ft. cable to LogBook (no external power required)	LBK1	Add to Cart
Internal 4-channel analog output module	LBK2	Add to Cart
Panel for fastening LBK1 to top of LogBook/300	Mount1	Add to Cart
Internal DRAM 16MB internal memory option (factory installed) for LBK1	LBKMEM1	Add to Cart
16MB internal memory upgrade (field upgrade kit) for LBK1	LBKMEM1-U	Add to Cart
Interface RS-422 and RS-485 interfaces added to existing RS-232 and parallel ports	LBK/COM/422/485	Add to Cart
Modem support software and Upload Scheduler application (does not include modem)	LogBook/Modem	Add to Cart
Factory installed serial I/O board and GPS support software	LogBook/GPS	Add to Cart
Blank termination panel	DBK601	Add to Cart
16-connector BNC termination panel	DBK602	Add to Cart
16-connector red safety-jack termination panel & wiring kit	DBK603	Add to Cart
16-connector (8 pairs) red & black safety-jack termination panel & wiring kit	DBK604	Add to Cart
14-connector type B thermocouple panel & wiring kit (male thermocouple connector sold separately)	DBK605-B	Add to Cart
14-connector type J thermocouple panel & wiring kit (male thermocouple connector sold separately)	DBK605-J	Add to Cart
14-connector type K thermocouple panel & wiring kit (male thermocouple connector sold separately)	DBK605-K	Add to Cart
14-connector type R thermocouple panel & wiring kit (male thermocouple connector sold separately)	DBK605-R	Add to Cart
14-connector type S thermocouple panel & wiring kit (male thermocouple connector sold separately)	DBK605-S	Add to Cart
14-connector type T thermocouple panel & wiring kit (male thermocouple connector sold separately)	DBK605-T	Add to Cart
48-connector removable-block screw-terminal panel & wiring kit	DBK606	Add to Cart
Slotted-termination panel with adjustable clamp	DBK607	Add to Cart
Three DB37 female connector termination panel & wiring kit	DBK608	Add to Cart
Expansion cable from LogBook to DBK expansion products 2.5 in expansion cable	CA-37-1T	Add to Cart
4.5 in expansion cable	CA-37-3T	Add to Cart

5.5 in expansion cable	CA-37-4T	Add to Cart
11.5 in expansion cable	CA-37-8T	Add to Cart
Ribbon cable with female DB37 connector, provides convenient wiring to LogBook P1, P2, and P3 ports without requiring soldering to DB37 connectors, 6 ft.	CA-113	Add to Cart
5-pin male locking DIN to automobile cigarette lighter power cable, 8 ft.	CA-171	Add to Cart
Retractable cable from LBK1 to LogBook/300, 6 ft.	CA-173	Add to Cart
Shielded cable for CE compliance, from LBK1 to LogBook/300, 3 ft.	CA-174	Add to Cart